IN THE CLAIMS

For the convenience of the Examiner, all pending claims of the present Application are shown below.

1. (Currently Amended) A communication system comprising:

one or more line cards each operable to receive at least one packet comprising an identifier associated with at least one of a plurality of destination elements, each line card comprising control circuitry operable to generate a control signal comprising control information;

one or more optical transmitters each associated with one of the one or more line cards and each operable to generate at a specified wavelength an optical signal comprising at least a portion of the at least one packet received by the line card associated with that optical transmitter, the optical signal further comprising ~~and~~ at least a portion of the control information of the control signal ~~from~~ generated by the control circuitry of the line card associated with that optical transmitter; and

a receiver associated with one of the one or more line cards and operable to receive an upstream optical signal from the plurality of destination elements;

a star communicating fabric operable to receive the optical signals from the one or more optical transmitters and to communicate to each of the plurality of destination elements a substantially similar set of at least some of the optical signals, wherein the at least a portion of the control information of the optical signal is communicated to each of the plurality of destination elements through the star communicating fabric in a same direction as the optical signals;

wherein each of the plurality of destination elements comprise a filter coupled to a destination receiver and a destination transmitter, the destination receiver operable to receive at least a fraction of the optical signals, the destination elements operable to, based at least in part on the control information of the optical signal, ~~signal,~~ perform an operation to generate the upstream optical signal that is transmitted by the destination transmitter, the destination elements coupled to the star communicating fabric, which communicates at least a fraction of the upstream optical signal to the receiver associated with the one of the line cards.

2. (Previously Presented) The communication system of Claim 1, wherein at least one of the one or more optical transmitters comprises a fixed wavelength optical transmitter.

3. (Previously Presented) The communication system of Claim 2, wherein the use of fixed wavelength optical transmitters comprises a primary mechanism for reducing collisions within the communicating fabric.

4. (Previously Presented) The communication system of Claim 1, wherein the filter is a tunable filter.

5. (Cancelled)

6. (Cancelled)

7. (Cancelled)

8. (Cancelled)

9. (Cancelled)

10. (Cancelled)

11. (Cancelled)

12. (Cancelled)

13. (Cancelled)

14. (Cancelled)

15. (Previously Presented) The communication system of Claim 1, wherein the packet comprises an Internet Protocol (IP) packet or a Transmission Control Protocol (TCP) packet.

16. (Previously Presented) The communication system of Claim 1, wherein the packet comprises a Multi-Protocol Label Switching (MPLS) or a Generalized Multi-Protocol Label Switching (GMPLS) packet.

17. (Previously Presented) The communication system of Claim 1, wherein the identifier comprises an address or a tag identifying an element external to the communication system to which information in the packet is destined.

18. (Cancelled)

19. (Cancelled)

20. (Cancelled)

21. (Cancelled)

22. (Cancelled)

23. (Previously Presented) The communication system of Claim 4, wherein the communication system is operable to facilitate multicast or broadcast operation by tuning multiple of the filters to the same selected wavelength.

24. (Previously Presented) The communication system of Claim 1, further comprising an optical-to-electrical converter coupled to the filter and operable to facilitate electronic processing of the optical signal received from the filter.

25. (Previously Presented) The communication system of Claim 1, wherein the star communicating fabric comprises a signal divider operable to receive a multiple wavelength signal and to communicate the multiple wavelength signal to a plurality of output paths from the star communicating fabric.

26. (Previously Presented) The communication system of Claim 25, wherein the signal divider comprises a cascade of 1xn optical couplers.

27. (Previously Presented) The communication system of Claim 25, wherein the signal divider comprises a power divider.

28. (Previously Presented) The communication system of Claim 25, wherein the star communicating fabric comprises a signal combiner operable to combine a plurality of wavelength signals into the multiple wavelength signal and to communicate the multiple wavelength signal to the signal divider.

29. (Previously Presented) The communication system of Claim 25, wherein the signal divider is coupled to an optical amplifier operable to amplify the multiple wavelength signal to at least partially compensate for a loss associated with the signal divider.

30. (Previously Presented) The communication system of Claim 1, wherein at least some of the one or more optical transmitters each comprise:

a modulator operable to receive from common bay equipment an unmodulated optical signal having a center wavelength and to modulate the received signal;

wherein the common bay equipment is operable to generate using a single optical source a plurality of unmodulated optical signals each having a center wavelength.

31. ((Previously Presented) The communication system of Claim 30, wherein the common bay equipment comprises:

a modelocked pulse source operable to generate a plurality of optical pulses;

a continuum generator operable to broaden the spectrum of the plurality of optical pulses into an approximate spectral continuum of optical pulses; and

a signal splitter operable to generate from the approximate continuum the plurality of unmodulated optical signals each comprising a center wavelength.

32. (Currently Amended) A line card for use in a communication system and operable to receive a packet comprising an identifier associated with a destination element, the line card comprising:

a control circuitry operable to facilitate generation of a control signal comprising control information based at least in part on the identifier;

an optical transmitter operable to generate an optical signal comprising at least a portion of the packet, the optical signal further comprising ~~and~~ at least a portion of the control information of the control signal at a particular wavelength, the optical transmitter further operable to communicate the optical signal to a star communicating fabric;

an optical receiver operable to receive an upstream optical signal, wherein the at least a portion of the control information of the optical signal is communicated to the destination element through the star communicating fabric in a same direction as the optical signals; and

wherein the destination element comprises a filter coupled to a destination receiver and a destination transmitter, the filter operable to receive at least a portion of the optical signals from the star communicating fabric; the destination receiver operable to receive at least a fraction of the optical signals, the destination elements operable to, based at least in part on the control information of the optical signal, ~~signal,~~ perform an operation to generate the upstream optical signal that is transmitted by the destination transmitter, the destination elements coupled to the star communicating fabric, which communicates at least a fraction of the upstream optical signal to the receiver associated with the one of the line cards.

33. (Original) The line card of Claim 32, wherein the optical transmitter comprises a fixed wavelength optical transmitter.

34. (Original) The line card of Claim 33, wherein the optical transmitter comprises an integrated modulator.

35. (Cancelled)

36. (Cancelled)

37. (Original) The line card of Claim 32, wherein the optical transmitter comprises:

a modulator operable to receive from common bay equipment an unmodulated optical signal having a center wavelength and to modulate the received signal;

wherein the common bay equipment is operable to generate using a single optical source a plurality of unmodulated optical signals each having a center wavelength.

38. (Currently Amended) A communication system comprising:

a first plurality of line cards residing in a first location;

a second plurality of line cards residing in one or more other locations physically separate from the first location, wherein each of the line cards of the first and second pluralities of line cards comprises a filter coupled to a receiver and an optical transmitter operable to generate at a specified wavelength an optical signal;

a star communicating fabric operable to receive a plurality of optical signals from the ~~plurality of~~ optical transmitters and to communicate substantially similar sets of optical signals to each of a plurality of filters, wherein each of the optical signals comprise at least a portion of at least one packet received by one of the plurality of first line cards;

wherein the star communicating fabric operates as an interconnect between the different locations of line cards and wherein the communication system is operable to communicate an optical signal from an optical transmitter residing in the first location to a filter residing in the one or more other locations without converting the optical signal to an electronic form between the optical transmitter and the filter; and

wherein the first plurality of line cards further comprise a control circuitry operable to generate a control signal comprising control information, and wherein the optical transmitters associated with the first plurality of line cards communicate the control information of the control signal as at least a part of the optical signal to the second plurality of line cards, and wherein the second plurality of line cards perform a function based at least in part on the control information of the control signal received, wherein the at least a portion of the control information of the optical signal is communicated to each of the second plurality of line cards through the star communicating fabric in a same direction as the optical signals.

39. (Previously Presented) The communication system of Claim 38, wherein at least one of the optical transmitters residing on the first or second plurality of line cards comprises a fixed wavelength optical transmitter.

40. (Previously Presented) The communication system of Claim 38, wherein at least one of the plurality of filters is a tunable optical filter.

41. (Previously Presented) The communication system of Claim 38, wherein each of the plurality of filters is a tunable optical filter.

42. (Previously Presented) The communication system of Claim 38, wherein at least one of the optical transmitters residing on the first or second plurality of line cards comprises:

a modulator operable to receive from common bay equipment an unmodulated optical signal having a center wavelength and to modulate the received signal;

wherein the common bay equipment is operable to generate using a single optical source a plurality of unmodulated optical signals each having a center wavelength.

43. (Currently Amended) A communication network comprising:

one or more line cards each operable to receive at least one packet comprising an identifier associated with at least one of a plurality of destination;

one or more control circuitry each associated with one of the line cards and operable to generate a control signal comprising control information;

one or more optical transmitters each associated with one of the line cards and each operable to generate at a specified wavelength an optical signal comprising at least a portion of the packet received by the associated the line card, the optical signal further comprising ~~and also comprising~~ at least a portion of the control information of the control signal;

one or more optical receivers each associated with one of the line cards and operable to receive an upstream optical signal from the one or more destination elements;

a star communicating fabric operable to receive one or more optical signals from at least some of the one or more optical transmitters and to communicate substantially similar sets of optical signals to at least some of the plurality of destination elements, wherein the at least a portion of the control information of the optical signal is communicated to each of the at least some of the plurality of destination elements through the star communicating fabric in a same direction as the optical signals;

wherein each of the plurality of destination elements comprises a filter coupled to a destination receiver and a destination transmitter, the destination receiver operable to receive at least a fraction of the optical signals, the destination elements operable to, based at least in part on the control information of the optical signal, perform an operation to generate the upstream optical signal that is transmitted by the destination transmitter, the destination elements coupled to the star communicating fabric, which communicates at least a fraction of the upstream optical signal to the receiver associated with the one of the line cards.

44. (Previously Presented) The communication network of Claim 43, wherein at least one of the one or more optical transmitters comprises a fixed wavelength optical transmitter.

45. (Previously Presented) The communication network of Claim 43, wherein at least one of the one or more optical transmitters resides externally to its associated line card.

46. (Previously Presented) The communication network of Claim 43, wherein at least one of the one or more optical transmitters comprises:

a modulator operable to receive from common bay equipment an unmodulated optical signal having a center wavelength and to modulate the received signal;

wherein the common bay equipment is operable to generate using a single optical source a plurality of unmodulated optical signals each having a center wavelength.

47. (Previously Presented) The communication network of Claim 43, wherein the packet comprises an Internet Protocol (IP) packet or a Transmission Control Protocol (TCP) packet.

48. (Previously Presented) The communication network of Claim 43, wherein the packet comprises a Multi-Protocol Label Switching (MPLS) or a Generalized Multi-Protocol Label Switching (GMPLS) packet.

49. (Currently Amended) A communicating core for use in a communication system, the communicating core comprising:

a star communicating fabric operable to receive a plurality of input optical signals, at least some optical signals ~~carrying~~ comprising a packet associated with a destination element and at least a portion of control information of a control signal generated by ~~from~~ a control circuitry, wherein the star communicating fabric is operable to generate a plurality of output optical signals each comprising a substantially similar set of at least some of the plurality of input optical signals; and

a plurality of destination elements coupled to the star communicating fabric, wherein the at least a portion of the control information of the optical signal is communicated to each of the plurality of destination elements through the star communicating fabric in a same direction as the optical signals,

wherein each of the plurality of destination elements comprises a filter coupled to a destination receiver and a destination transmitter, the destination receiver operable to receive at least a fraction of the optical signals, the destination elements operable to, based at least in part on the control information of the optical signal, perform an operation to generate the upstream optical signal that is transmitted by the destination transmitter, the destination elements coupled to the star communicating fabric, which communicates at least a fraction of the upstream optical signal to the receiver associated with the one of the line cards.

50. (Previously Presented) The communicating core of Claim 49, wherein at least one of the plurality of input optical signals is generated by a fixed wavelength optical transmitter.

51. (Previously Presented) The communicating core of Claim 49, wherein the packet comprises an Internet Protocol (IP) packet or a Transmission Control Protocol (TCP) packet.

52. (Previously Presented) The communicating core of Claim 49, wherein the packet comprises a Multi-Protocol Label Switching (MPLS) or a Generalized Multi-Protocol Label Switching (GMPLS) packet.

53. (Previously Presented) The communicating core of Claim 49, wherein the star communicating fabric comprises a signal divider operable to receive a multiple wavelength signal and to communicate the multiple wavelength signal to a plurality of output paths from the star communicating fabric.

54. (Previously Presented) The communicating core of Claim 53, wherein the signal divider comprises a cascade of 1xn optical couplers.

55. (Previously Presented) The communicating core of Claim 53, wherein the signal divider comprises a power divider.

56. (Previously Presented) The communicating core of Claim 53, wherein the star communicating fabric comprises a signal combiner operable to combine a plurality of wavelength signals into the input optical signal and to communicate the input optical signal to the signal divider.

57. (Previously Presented) The communicating core of Claim 53, wherein the signal divider is coupled to an optical amplifier operable to amplify the input optical signal to at least partially compensate for a loss associated with the signal divider.

58. (Currently Amended) A communicating core for use in a communication system, the communicating core comprising:

a signal combiner operable to combine a plurality of wavelength signals into a multiple wavelength signal, wherein the multiple wavelength signal comprises at least a portion of at least one packet;

a control circuitry operable to generate a control signal comprising control information, the multiple wavelength signal comprising at least a portion of the control information of the control signal generated by the control circuitry; ~~that is combined with at least a portion of the multiple wavelength signal;~~

an optical amplifier operable to receive and amplify at least a fraction of the multiple wavelength signal;

a signal divider operable to receive a multiple wavelength signal and to communicate the multiple wavelength signal toward a plurality filters, each filter associated with an output link from the communication system and operable to separate the multiple wavelength signal into a plurality of output wavelength signals, wherein the at least a portion of the control information of the multiple wavelength signal is communicated to each of the plurality of filters through the star communicating fabric in a same direction as the multiple wavelength signal;

at least some of the output wavelength signals coupled to one or more receivers, wherein the receivers perform a function at the output link based at least in part on the control information of the control signal ~~from~~ generated by the control circuitry.

59. (Previously Presented) The communicating core of Claim 58, wherein the signal combiner comprises a wavelength division multiplexer.

60. (Previously Presented) The communicating core of Claim 58, wherein the signal divider comprises a cascade of 1xn optical couplers.

61. (Previously Presented) The communicating core of Claim 58, wherein the signal divider comprises a power splitter.

62. (Previously Presented) The communicating core of Claim 58, wherein at least some of the filters comprise tunable filters operable to select a portion of the multiple wavelength signal for further transmission by tuning to a wavelength of the selected portion of the multiple wavelength signal.

63. (Previously Presented) The communicating core of Claim 58, wherein the plurality of wavelength signals received by the signal combiner comprise optical signals generated by tunable optical transmitters.

64. (Currently Amended) A communication system, comprising:

one or more line cards each operable to receive at least one Internet Protocol (IP) or Transmission Control Protocol (TCP) or Multiple Protocol Label Switching (MPLS) or Generalized Multiple Protocol Label Switching (GMPLS) packet, each line card operable to perform header or label processing to facilitate communicating the received packet toward one or more destination elements, and each line card further comprising a control circuitry capable of generating a control signal comprising control information;

one or more optical transmitters each associated with one of the line cards and each operable to generate at a particular wavelength an optical signal comprising at least a portion of the packet received by the line card associated with that optical transmitter, the optical signal further comprising at least a portion of ~~and further comprising~~ the control information of the control signal ~~from~~ generated by the control circuitry; and

a star communicating fabric operable to receive one or more optical signals from the one or more optical transmitters and to communicate a substantially similar set of optical signals to each of one or more destination elements, wherein the at least a portion of the control information of the optical signal is communicated to each of the one or more destination elements through the star communicating fabric in a same direction as the optical signals,

wherein each of the one or more destination elements comprises a filter coupled to a destination receiver and a destination transmitter, the destination receiver operable to receive at least a fraction of the optical signals, the destination elements operable to, based at least in part on the control information of the optical signal, perform an operation to generate the upstream optical signal that is transmitted by the destination transmitter, the destination elements coupled to the star communicating fabric, which communicates at least a fraction of the upstream optical signal to the destination receiver ~~associated with the one of the line cards~~.

65. (Previously Presented) The communication system of Claim 64, wherein each of the one or more optical transmitters comprises a tunable transmitter operable to selectively tune to a wavelength passed by a selected one of the filters coupled to a desired output link from the communication system.

66. (Previously Presented) The communication system of Claim 64, wherein at least one of the one or more optical transmitters comprises:

a modulator operable to receive from common bay equipment an unmodulated optical signal having a center wavelength and to modulate the received signal;

wherein the common bay equipment is operable to generate using a single optical source a plurality of unmodulated optical signals each having a center wavelength.

67. (Currently Amended) The communication system of Claim 64, wherein at least some of the filters comprises a tunable filter operable to selectively tune to a wavelength of a particular optical signal destined for transmission ~~from the~~ from an associated output link.

68. (Previously Presented) The communication system of Claim 67, wherein at least one of the optical transmitters comprises a fixed wavelength optical transmitter.

69. (Previously Presented) The communication system of Claim 64, wherein at least one of the filters resides externally to all of the line cards.

70. (Currently Amended) The communication system of Claim 64, wherein each of the filters resides on a respective one of the one or more line cards that is coupled ~~to the~~ to an optical output link associated with that filter.

71. (Currently Amended) In a communication system comprising one or more line cards coupled to a star communicating fabric, a method of communicating optical signals, comprising:

receiving at a first line card a first packet comprising an identifier;

using a control circuitry on the first line card to determine a control signal comprising control information;

generating an optical signal at the first line card, the optical signal comprising at least a portion of the first packet received by the first line card, the optical signal further comprising at least a portion of the control information of the control signal;

communicating the first packet and the control information of the control signal to a star communicating fabric in an optical format having a first wavelength;

communicating from the star communicating fabric to a plurality of destination elements each associated with a separate output link from the communication ~~system,~~ system the first packet and the control information of the optical signal, wherein the at least a portion of the control information of the optical signal is communicated to each of the plurality of destination elements through the star communicating fabric in a same direction as the optical signals;

wherein each of the plurality of destination elements comprises a filter coupled to a destination receiver and a destination transmitter, the destination receiver operable to receive at least a fraction of the optical signals, the destination element operable to, based at least in part on the control information of the optical signal, perform an operation to generate the upstream optical signal that is transmitted by the destination transmitter, the destination elements coupled to the star communicating fabric, which communicates at least a fraction of the upstream optical signal to the receiver associated with the one of the line cards.

72. (Cancelled)

73. (Previously Presented) The method of Claim 71, wherein communicating the first packet to a star communicating fabric in an optical format having a first wavelength comprises:

generating a first optical signal comprising the first packet using a fixed wavelength optical transmitter operable to generate optical signals at approximately the first wavelength.

74. (Previously Presented) The method of Claim 73, wherein the control circuitry and the fixed optical transmitter reside on the first line card.

75. (Previously Presented) The method of Claim 71, wherein communicating the first packet to a star communicating fabric in an optical format having a first wavelength comprises:

receiving an unmodulated optical signal having the first wavelength from common bay equipment operable to generate a plurality of unmodulated optical signals each having a center wavelength;

modulating information onto the unmodulated optical signal; and

communicating the modulated optical signal to the star coupler.

76. (Previously Presented) The method of Claim 71, wherein the first packet comprises an Internet Protocol (IP) packet or a Transmission Control Protocol (TCP) packet and wherein the identifier comprises an address identifying the particular destination element.

77. (Previously Presented) The method of Claim 71, wherein the first packet comprises a Multi-Protocol Label Switching (MPLS) packet or a Generalized Multi-Protocol Label Switching (GMPLS) packet and wherein the identifier comprises a tag identifying the particular destination element.

78. (Cancelled)

79. (Cancelled)

80. (Cancelled)

81. (Cancelled)

82. (Cancelled)

83. (Cancelled)

84. (Cancelled)

85. (Previously Presented) The method of Claim 71, wherein communicating the first packet to the star communicating fabric and communicating the first packet from the star communicating fabric to the filters comprises:

communicating the first packet from the first line card to the selected filter without converting the first packet from an optical to an electrical format between the first line card and the selected filter.

86. (Cancelled)

87. (Cancelled)

88. (Cancelled)

89. (Previously Presented) The communication system of Claim 1, wherein the upstream optical signal from the plurality of destination elements is at a different wavelength than the specified wavelength.

90. (Previously Presented) The communication system of Claim 1, wherein at least some of the one or more optical transmitters is coupled to an optical amplifier.

91. (Previously Presented) The communication system of Claim 90, wherein the optical amplifier is selected from the group consisting of a distributed Raman amplifier, a discrete Raman amplifier, a rare earth-doped amplifier, a semiconductor amplifier, and an erbium-doped fiber amplifier.

92. (Previously Presented) The communication system of Claim 1, wherein the one or more optical transmitters are further coupled to a wavelength division multiplexer or demultiplexer (WDM).

93. (Previously Presented) The communication system of Claim 1, wherein the star communicating fabric comprises a signal divider operable to receive an optical wavelength signal and to communicate the optical wavelength signal to a plurality of output paths from the star communicating fabric.

94. (Previously Presented) The communication system of Claim 93, wherein the signal divider comprises a cascade of 1xn optical couplers.

95. (Previously Presented) The communication system of Claim 93, wherein the signal divider is coupled to an optical amplifier operable to amplify the optical wavelength signal to at least partially compensate for a loss associated with the signal divider.

96. (Previously Presented) The communication system of Claim 1, wherein the control circuitry comprises a scheduler.

97. (Previously Presented) The communication system of Claim 1, wherein at least some of the plurality of destination elements are located at different physical locations.

98. (Previously Presented) The line card of Claim 32, wherein the upstream optical signal is at a different wavelength than the optical signal.

99. (Previously Presented) The line card of Claim 32, wherein the transmitter is further coupled to a wavelength division multiplexer or demultiplexer (WDM).

100. (Previously Presented) The line card of Claim 32, wherein the star communicating fabric comprises a cascade of 1xn optical couplers.

101. (Previously Presented) The communication system of Claim 38, wherein the star communicating fabric comprises a cascade of 1xn optical couplers.

102. (Previously Presented) The communication network of Claim 43, wherein the upstream optical signal is at a different wavelength than the optical signal.

103. (Previously Presented) The communication network of Claim 43, wherein the one or more optical transmitters are further coupled to a wavelength division multiplexer or demultiplexer (WDM).

104. (Previously Presented) The communication network of Claim 43, wherein the star communicating fabric comprises a cascade of 1xn optical couplers.

105. (Previously Presented) The communication network of Claim 43, wherein the plurality of destination elements are remotely located from the one or more line cards.

106. (Previously Presented) The communicating core of Claim 49, wherein the upstream optical signal is at a different wavelength than the input optical signals.

107. (Previously Presented) The communicating core of Claim 49, wherein the star communicating fabric comprises a cascade of 1xn optical couplers.

108. (Previously Presented) The communicating core of Claim 49, wherein each of the plurality of destination elements are located in different location.

109. (Previously Presented) The communicating core of Claim 58, wherein the signal divider is a cascade of 1xn couplers.

110. (Previously Presented) The communication system of Claim 64, wherein the upstream optical signal is at a different wavelength than the optical signal.

111. (Previously Presented) The communication system of Claim 64, wherein the one or more optical transmitters are further coupled to a wavelength division multiplexer or demultiplexer (WDM).

112. (Previously Presented) The communication system of Claim 64, wherein the star communicating fabric comprises a cascade of 1xn optical couplers.

113. (Previously Presented) The communication system of Claim 64, wherein the one or more line cards are located at a different location than the one or more destination elements.

114. (Previously Presented) The method Claim 71, wherein the upstream optical signal is at a different wavelength than the first wavelength.

115. (Previously Presented) The method of Claim 71, wherein the star communicating fabric comprises a cascade of 1xn optical couplers.

116. (Previously Presented) The method of Claim 71, wherein the one or more line cards are located at a different location than the plurality of destination elements.